



Pest e-alerts



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Bacterial Blight Outbreak on Soybeans

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The recent rains and cool weather have really increased levels of bacterial blight in several soybean fields I have visited recently. It is particularly severe in irrigated fields in western OK. Bacterial blight is one of the most common foliar diseases of soybeans. We see a lot of it in leaf samples from soybean rust sentinel plots and in research plots. This is probably because there is so much traffic in field plots. Bacteria are very contagious and spread efficiently by mechanical means such as people and equipment. Water splash and windblown rain are also efficient vectors of bacterial blight. The bacterium that causes bacterial blight (*Pseudomonas syringae* pv. *glycinea*) is favored by cool temperatures (in the 70's) and rainy weather.

Symptoms of bacterial blight tend to appear first on the upper leaves. This is different from most other foliar diseases of soybean such as rust or brown spot which begin on older leaves. Symptoms appear as small yellow spots which turn brown in the centers (Fig. 1). Spots appear water-soaked on the undersides of affected leaves (Fig. 2). Mature spots often have a bright-yellow border around dark brown spots (Fig. 3). As spots become numerous, age, and coalesce; dead areas of the leaves crack, fall out, and diseased leaves appear ragged (Fig. 3). Large black spots also appear on stems and leaf petioles. Severe defoliation may reduce yield, but obvious yield losses to bacterial blight are not thought to be common and the disease is considered minor. Bacterial blight is easily confused with Septoria brown spot (Fig. 4), a fungal disease that develops first on the lower leaves.



Fig. 1. Early symptoms of bacterial blight. Note the yellow spots with developing brown centers.



Fig. 2. Bacterial blight lesions may appear water-soaked on the lower leaf surface.



Fig. 3. Severe bacterial blight showing mature spots with pronounced yellow borders and advanced disease development on ragged, shot-holed leaves.

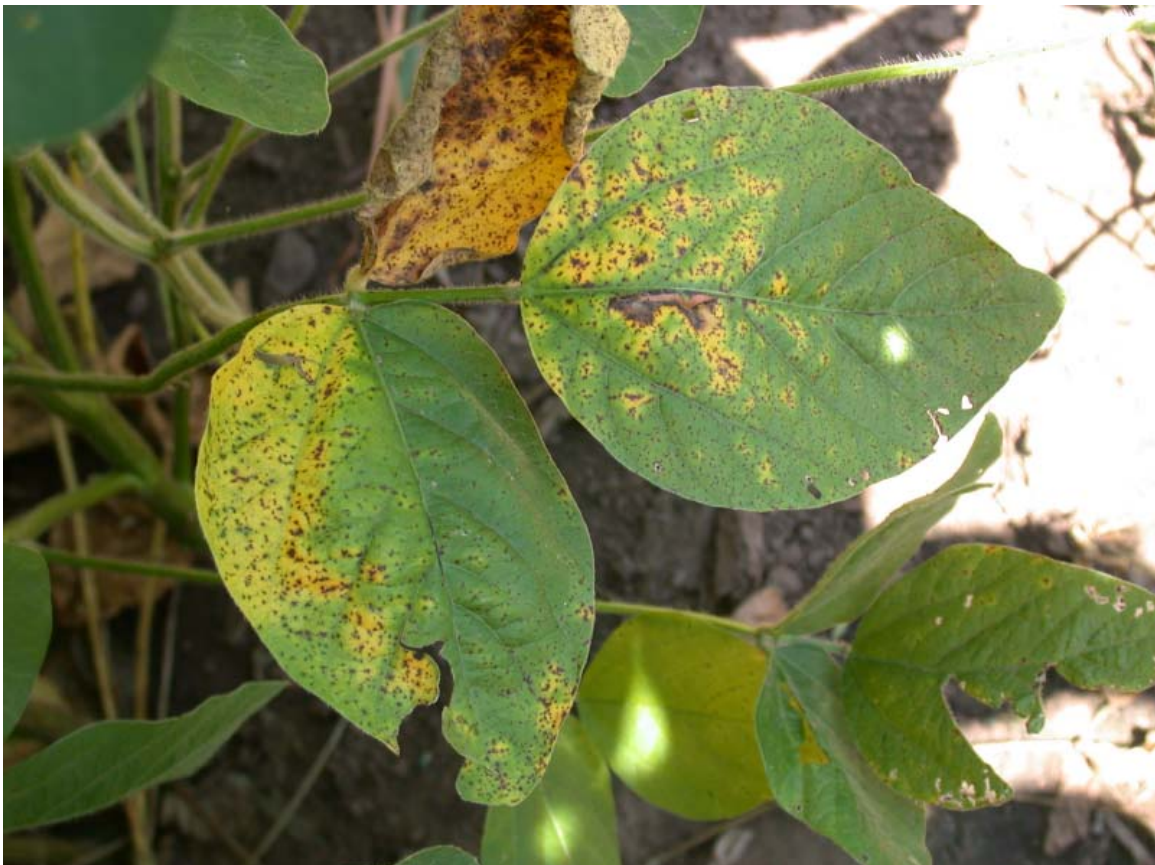


Fig. 4. Septoria brown spot is a fungal disease common in old soybean fields that resembles bacteria blight.

At least four resistance genes to bacterial blight have been reported in soybean germplasm. However, major seed companies do not report resistance to bacterial blight in their soybean varieties, probably because there are nine reported races of the pathogen so it is likely difficult to predict how resistant cultivars will perform in a given area or year. Contaminated seed and crop debris are the major sources of the bacterial blight pathogen. The bacteria may colonize leaf surfaces without producing symptoms until conditions become favorable. Rain splash and wind-driven aerosols can drive bacteria into natural leaf openings (stomata) causing rapid increases in disease.

There are no effective controls for bacterial blight when an aggressive race, a susceptible cultivar, and weather favor disease development. Fungicides do not control bacterial blight because the disease is not caused by a fungus. Had the disease been anticipated early on, repeated sprays with copper may have been beneficial, but sprays with copper and other bactericides are not very effective when bacterial disease is already established and generally not recommended for soybeans. Furthermore, application of a strobilurin-type fungicide for plant health benefits is likely not to produce desired results (a yield increase) where bacterial disease is severe. Crop rotation with a non-legume crop and management of infected crop residue are recommended cultural control for bacterial blight and other foliar disease of soybeans.

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